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ABSTRACT

Language development in preschool children was studied using pairs of pictures with three types of verbal elaboration formed for each pair. After a training trial thirty children listened to one of three types of elaboration (simple sentence, compound or complex sentence and paragraph). They were asked to name the corresponding response item. Results indicated that the number of relations within an elaboration is more important than its structure in facilitating the performance of young children. Results are discussed in terms of semantic relations. (DP)

Relational and Structural Components in Verbal
Elaboration with Young Children

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In the last decade, it has been repeatedly demonstrated that embedding noun pairs within verbal elaborations (e.g., sentences) produces impressive facilitation in the paired associate learning of young children. Initial attempts to identify the locus or explain the basis of the observed facilitation focused on grammatical relations and surface structure factors. Although some research demonstrated differential effects from intra-sentential manipulations (e.g., verb connectives form better elaborations than prepositions, which in turn form better ones than conjunctions), recent research indicates that the formation of semantic relations in an elaboration is of primary importance in determining its effectiveness (Ehri & Richardson, 1972; Ehri & Rohwer, 1969). In fact, Rohwer (1973) has recently defined "elaboration" in relational terms: "At a minimum, an [elaborative] event is conceived to consist of two objects (or, more abstractly, topics) and some episode, process, or relation involving both of them, either explicitly or by implication or by entailment [p. 5]."

Turnure and Walsh (1971) recently investigated the boundary conditions for paired-associate enhancement under elaborative contexts. Previous to this, elaborational research had been limited to single sentence elaborations. Turnure and Walsh demonstrated that extended

ED 087544

PS 007026

syntactical elaborations in the form of two-sentence paragraphs produced significantly greater facilitation than did the single sentences (see also Turnure, 1971). While there appeared to be no ready explanation of why paragraph elaborations should be superior to sentences (exposure time was controlled; surface structure interpretations did not seem amenable to extensions beyond sentence boundaries; no increments in "meaningfulness" were ascertainable), subsequent consideration suggested the possibility that a greater number of explicit or implicit "relations" had been inadvertently included in the paragraphs. In the present study, an original design was employed to explore the effect of increasing the number of relations in a given elaboration; and at the same time to separate this effect from the facilitation previously attributed to the paragraph structure (Turnure, 1971).

Method

Subjects. Thirty 4 to 5 year old Caucasian children, attending an upper middle class urban nursery school were assigned to three conditions. There were 5 males and 5 females in each condition.

Materials. Twenty pairs of colored pictures with no obvious or common relations of sound or meaning were employed. Three types of elaborations were formed for each pair. Two of the types were sentences: Sentence-1 elaborations contained one "relation" between the stimulus and response; Sentence-3 elaborations contained three such relations. The third type of elaboration was a two-sentence

paragraph (Paragraph-3) made up from the same three relations used to construct the Sentence-3 elaborations. The mean numbers of words in the Sentence-1, Sentence-3, and Paragraph-3 conditions were 6.4, 15.6, and 15.2, respectively.

A "relation" was defined generally in terms of a separate link, connection, or association between the stimulus and response items. In other words, the number of relations within a given elaboration corresponded to the number of "events" (Rohwer, 1973) that served as common referents for the stimulus and response terms. In the Sentence-1 condition, one event connected the stimulus and response, and this event was expressed in a simple declarative sentence (e.g., The turtle crawled into the basket). In the Sentence-3 and Paragraph-3 conditions, three events connected the stimulus and response terms, although each term occurred only once in an elaboration. In the Sentence-3 condition, the events were expressed in the form of a compound or complex declarative sentence (e.g., The turtle crawled into the basket so he could sleep there, but then he couldn't get out). In the Paragraph-3 condition, the same three events were couched in a paragraph structure (e.g., The turtle crawled into the basket. He slept there and then he couldn't get out).

Procedure. Experimental procedures were the same for the three conditions, except for the type of elaboration presented. All subjects were given one training trial during which the experimenter simultaneously presented the stimulus and response pictures and uttered the sentence or paragraph relating them, allowing 10 seconds

for each pair. The subject was not allowed to verbalize the elaboration, but was instructed to listen carefully and then to repeat only the names of the pictures he was shown. These procedures were employed to make the task more difficult (Taylor, Josberger & Whitely, 1973) and to avoid the ceiling effects so often evident in elaboration studies (cf., Thurlow & Turnure, 1972). A single acquisition trial followed training. During this trial, each stimulus picture was shown to the subject and he was asked to respond with the name of the corresponding response item. If an incorrect response was given or no response was made within 20 seconds, an error was scored. The number of errors made on this trial was taken as the measure of acquisition.

Results

The mean numbers of errors made on the 20 pairs in the three groups were: Sentence-1, 12.4 ($SD=3.4$); Sentence-3, 8.1 ($SD = 2.7$); Paragraph-3 8.1 ($SD = 2.6$). A planned comparison test of the number of errors made in the one-relation condition (Sentence-1) with the mean number in the three-relation conditions (Sentence-3 and Paragraph-3) revealed a significant difference [$F(1,27) = 14.33, p < .001$]. The comparison of the numbers of errors made by the Sentence-3 and Paragraph-3 groups was not significant ($F < 1$).

Correlational analyses were performed on the proportion of subjects making errors on each of the 20 pairs for: (a) the two groups receiving elaborations with a common physical structure (Sentence-1 and Sentence-3) and (b) the two groups receiving elaborations with a common

number of relations (Sentence-3 and Paragraph-3). These analyses were undertaken on the assumption that the correlation between the number of subjects erring on each pair would be highest for elaboration conditions in which the same factor was affecting performance. Although both correlations were significant, the correlation was much higher between groups receiving the same number of relations [$r(18) = .74, p < .001$] than between groups receiving the same structure [$r(18) = .53, p < .02$]. These results provided further support for the notion that common relational characteristics were more important in producing comparable facilitation of paired-associate learning than were common physical structures.

Discussion

The results of the present study suggest that the number of relations within an elaboration is more important than its structure in facilitating the performance of young children. It is possible that demonstrations of the superiority of certain structures (i.e., paragraphs; Turnure, 1971; Turnure & Walsh, 1971; see also Thurlow & Turnure, 1972) have inadvertently been due to the establishment of more relations between pairs within such structures.

There still appears to be no ready explanation as to how an increase in the number of relations between items produces enhanced paired-associate acquisition. Response latency data have shown no differences between the recall of singly and multiply related items (Thurlow & Turnure, 1972), thus weakening successive retrieval or multiple scan interpretations. Given that experimenter-imposed relations must be

PS 007026

comprehended by the child to be effective, increasing the number of relations should increase the probability that at least one will be comprehended; a testable hypothesis.

In any case, the significant difference between the Sentence-1 and Sentence-3 groups possibly should not be interpreted as simply meaning that the number of relations determines elaborational efficiency. This cautionary note follows from the observation that performances in Sentence-3 and Paragraph-3 conditions were not superior to those in the Sentence-1 conditions for all pairs; for three pairs, the one-relation elaborations were more effective than the three-relation elaborations. In these cases, the "quality" of the one relation may have been superior, and additional relations may have only served to interfere with those already established by the subject.

Recent differences of opinion pertaining to the relation of semantics to syntactics (see Fillenbaum, 1971; McCawley, 1968) have indicated that a good deal of valuable information may be generated by investigating semantic relationships which are only "intuitively" formulated (see Bever, 1970; Martin and Olson, 1971; Paivio, 1970), rather than being "derived" from linguistic theory. Quite recently, psychologists of a cognitive persuasion have begun to systematize characteristics of semantic relations as regards meaning, reference, and interpretation (Olson, 1970; Perfetti, 1972; see also Carroll and Freedle, 1972). Such analyses should generate agreeable differences regarding the quality or potency of various semantic relations; these could then be readily manipulated in a design such as that applied in the present study.

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Footnote

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